

LIMITED ONE YEAR WARRANTY

MAXTEC INTERNATIONAL CORPORATION warrants to the original purchaser that its **BK Precision** product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

MAXTEC will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized **BK Precision** service contractor or to the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing and mailing the enclosed warranty registration card to MAXTEC **BK Precision**, 6470 West Cortland Street, Chicago, Illinois 60635 within (15) days from the date of purchase.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered, defaced or removed.

MAXTEC shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may have other rights which vary from state-to-state.

For your convenience, we suggest you contact your **BK Precision** distributor, who may be authorized to make repairs or can refer you to the nearest service contractor. If warranty service cannot be obtained locally, please send the unit to **BK Precision** Service Department, 6470 West Cortland Street, Chicago, Illinois 60635, properly packaged to avoid damage in shipment.

BK Precision Test Instruments only warrants products sold in the U.S.A and its overseas territories. In other countries, each distributor warrants the **BK Precision** products which it sells.

CUSTOMER SUPPORT

1-800-462-9832

BK Precision offers courteous, professional technical support before and after the sale of their test instruments. The following services are typical of those available from our toll-free telephone number:

- Technical advice on the use of your instrument.
- Technical advice on special applications of your instrument.
- Technical advice on selecting the best instrument for a given task.
- Information on optional accessories for your instrument.
- Information on instrument repair and recalibration services.
- Replacement parts ordering.
- Information on other **BK Precision** instruments.
- Requests for a new **BK Precision** catalog.
- The name of your nearest **BK Precision** distributor.

Call toll-free 1-800-462-9832

Monday through Friday, 8:00 A.M. to 5:00 P.M.

Central Standard Time

(Central Daylight Time in summer)



BK PRECISION®

MAXTEC INTERNATIONAL CORP.

6470 W. Cortland St. • Chicago, IL 60635

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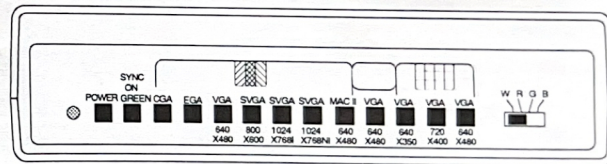
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INSTRUCTION MANUAL



BK PRECISION®

COMPUTER MONITOR PATTERN GENERATOR
MODEL 1280



SPECIFICATIONS

OPERATING CHARACTERISTICS

Format	Horiz. Rate	Vert. Rate	Pixels	Pattern	Notes
CGA	15750	60	640 x 200	Color Bars	Interlaced
EGA*	22000	60	640 x 350	Color Bars	
VGA*	31500	70	640 x 350	Crosshatch	
VGA*	31500	70	720 x 400	Crosshatch	
VGA	31500	60	640 x 480	Crosshatch	
VGA	31500	60	640 x 480	Rasters	White, Red, Green or Blue, Switch Selectable
VGA	31500	60	640 x 480	Color Bars & Gray-scale (8-step)	
SVGA	35000	56	800 x 600	As above	
SVGA	35000	87	1024 x 768	As Above	Interlaced
SVGA	48000	60	1024 x 768	Color Bars & Gray-scale w/hatch lines	Non-interlaced
MAC II	35000	67	640 x 480	As Above	Sync on Green

Note: SYNC ON GREEN button adds sync on green to all CGA, VGA and SVGA patterns except those indicated with an *.

OUTPUTS

Type	Level	Connectors
CGA/EGA	TTL	DB9
VGA/SVGA	Red, Blue (0.7 V) Green, no sync (0.7 V) Green, w/sync (1.0 V) Horiz., Vertical Sync (TTL)	HD-15, BNC
MAC II	Red, Blue (0.7 V) Green w/sync (1.0 V)	DB15, BNC

Note: Separate Red, Green, Blue, Vertical Sync and Horizontal Sync outputs are available via BNC jacks on rear panel for VGA, SVGA and MAC II. Be aware that MAC II has composite sync on green and does not require separate horizontal and vertical sync outputs.

GENERAL SPECIFICATIONS

Power:	AC adaptor or single alkaline 9 V battery NEDA 1640A, or equivalent, or external dc 7.5 to 12 V dc @ 70 mA.
Operating Temperature:	0 to 40 °C $\pm$ 80 % Relative Humidity.
Storage Temperature:	-10 to +60 °C $\pm$ 70% Relative Humidity.
Dimensions (H x W x D):	2.2" x 8.1" x 6.25" (55.9 x 205.3 x 158.8 mm).
Weight:	1 lb. (450 g).
Supplied Accessories:	Instruction Manual, AC Adaptor.
Optional Accessories:	BNC-to-BNC 75 ohm cables.

MAINTENANCE

INTRODUCTION

This color generator can operate from an external dc power source providing an output of 7.5 to 12 V dc at 70 mA, or a single alkaline 9 V (NEDA 1604A, or equivalent) battery. For your convenience, an ac adaptor providing the rated output was supplied with this generator. When this adaptor is used, the battery is automatically disconnected.

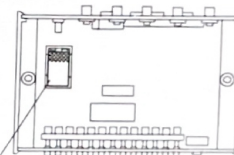
BATTERY INSTALLATION and REPLACEMENT

A low battery is indicated when the power switch is on (adaptor not used), and the indicator does not light, or is not at full brightness. If the battery is low, typically the indicator will light momentarily and then go off.

CAUTION

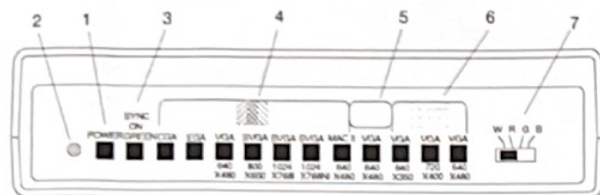
Remove low or discharged batteries promptly to avoid personal harm and/or meter damage. Low batteries leak corrosive acid.

1. Make sure this generator is disconnected from the equipment to avoid the possibility of damage.
2. Make sure POWER pushbutton is set to off (out).
3. Turn unit over and remove the two screws from the bottom cover.
4. Turn unit over again and remove top cover.
5. Remove old battery from battery holder and dispose properly.
6. Push fresh battery into snap type polarized holder.
7. Reverse procedures of steps (3) and (4) to complete replacement procedures.



9 V BATTERY

CONTROLS and INDICATORS

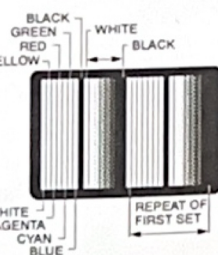


- POWER**
Press to turn power off or on.
- Power Indicator**
Lights to show when power is on, ac adaptor and battery operation.
- SYNC ON GREEN**
Press to add sync on green to CGA, VGA and SVGA patterns.
- Color Bars/8 Step Gray-Scale Pattern**
Press appropriate pushbutton to display the color bar/8 step gray-scale pattern. Select button that indicates type and pixel rating of your monitor: CGA; EGA; VGA 640 x 480; SVGA 800 x 600, or 1024 x 768i, or 1024 x 768Ni; MAC II 640 x 480.
- Raster**
Press to activate a solid pattern when testing VGA monitors. Select color of pattern with switch of step (7).
- Crosshatch**
Press appropriate switch to activate a crosshatch pattern for VGA monitors at 640 x 350, 720 x 400 or 640 x 480 pixels.
- W/R/G/B**
Slide switch to select color of raster pattern, W (white), R (red), G (green) or B (blue).
- Power Input (rear of case)**
Plug AC adaptor into this jack when operating instrument from line voltage.
- Video Connectors**
Video connectors for each type of monitor are located at the rear panel see GENERAL INSTRUCTIONS for more details.

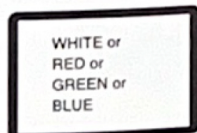
USE OF PATTERNS

The primary use of this generator is to provide a quick check of the operating condition of a monitor and to adjust the external controls for best performance. However, the crosshatch pattern provides an excellent source for convergence and deflection system checks and adjustments.

- CROSSHATCH**
Press button indicating your type of monitor under crosshatch pattern at front panel to activate. Use this pattern to check dynamic convergence and linearity. Pattern should appear as shown at right side of this step. Horizontal and vertical lines should be sharp and linear. Be sure to adjust related circuits if pin cushion pattern is shown.
- COLOR BAR/8 STEP GRAY-SCALE PATTERN**
Press button indicating your type of monitor under Color Bars. You should see two sets of eight vertical color bars and 8 vertical gray-scales. The last color bar and last gray scale is black. All primary and complementary colors are shown in the color bars. If the full gray-scale is needed, adjust contrast and brightness so slight contrast is visible between seventh and eight (black) gray-scales. However, the full gray-scale may not produce the best viewing conditions in all situations.



- Raster**
Press RASTER and then choose color of raster with W (white), R (red), G (green), B (blue) slide selector. Typically used to check and/or adjust purity of primary colors. When these colors are correctly adjusted, white should appear as a pure white without a tint shade.



SAFETY GUIDELINES

WARNING

An electrical current causing 10 milliamps of current to pass through the heart will stop most human heartbeats. Voltage as low as 35 volts dc or ac rms should be considered hazardous since it can produce lethal current under certain conditions. Higher currents are even more dangerous. Be sure to observe the following safety precautions:

- There are no high voltages in the color pattern generator, but the equipment under test usually contains hazardous high voltage. Always follow the safety recommendations of the manufacturer of your equipment.
- Some equipment may be wired as a "hot chassis" type, equipment using two-wire power plugs are always suspect and it may even include those with polarized power plugs. Never touch chassis of "hot chassis" type equipment to avoid the possibility of a serious, possibly fatal electrical shock. When servicing this type of equipment, the BK Precision Model TR-110 or 1604A Isolation Transformer or Model 1653 AC Power Supply is suitable for most applications. To be on the safe side, assume all two-wired equipment is of the "hot-chassis" type.
- Don't expose yourself needlessly to high voltage; only remove housings and covers when necessary.
- Familiarize yourself with the equipment being tested and the location of its high voltage points. However, be aware that high voltage may appear at unexpected points in defective equipment.
- Never work alone. Someone should be nearby to render aid if needed. Training in CPR (cardio-pulmonary resuscitation) is highly recommended.

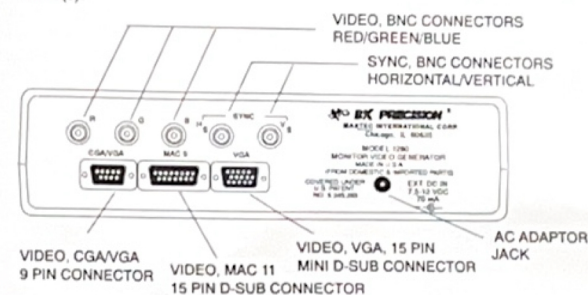
GENERAL INSTRUCTIONS

- If possible, use the ac adaptor for power, plug it into the mating jack at the rear panel of this pattern generator. When the ac adaptor is plugged in, the battery is automatically disconnected. This instrument is typically only operated on battery power when it is used in the field.
- Before using instrument on battery power, make sure battery is fresh. You can note the approximate power on condition of the battery as indicated in step (8).

OPERATING INSTRUCTIONS

GENERAL INSTRUCTIONS (continued)

- Make sure monitor being tested is switched to off and that the input power cable is plugged into the appropriate ac power source, typically 115 V ac.
- Verify type of monitor being tested (EGA/VGA, etc.) then connect video cable(s) from monitor into mating connector(s) at rear of this test instrument. Use the following illustration of the rear of this instrument as a guide to connect cable(s).



- When using the BNC signal, connections depend on video system:
 - Separate system: connect cables to Red, Green, Blue, H_s and V_s connectors.
 - Sync on Green system: connect cables to Red, Green, Blue connectors and press SYNC on GREEN at front panel.
- Determine the type of test desired then push in appropriate buttons at front panel to make your selection. See CONTROLS & INDICATORS for full details.
- Push in POWER switch to turn on instrument and carry out test. Refer to manufacturers manual and the SPECIFICATIONS and APPLICATIONS of this manual to note expected results.
- If battery is used for power, note brightness of POWER indicator light. If light is off, or not at full brightness, battery is probably low. In this case replace with a fresh battery as indicated in MAINTENANCE instructions of this manual.

APPLICATIONS

CONVERGENCE & PURITY

Detailed convergence and purity information is not given in this manual; obtain it from the manufacturer of your monitor or from a source such as Howard Sams "Photofact" series folders. Also, this information may only be available for the higher quality, multi-frequency monitors. Typically, lower cost monitors are replaced instead of repaired.

If you use the crosshatch pattern for dynamic convergence adjustments, be sure that brightness and contrast are correctly adjusted. If these settings are excessive, you may see defocusing, some blooming and "kinks" at the crosshatch intersections. However, be aware that excessive blooming may also indicate a defective (low) high voltage supply.

DEFLECTION SYSTEM TESTS

The crosshatch pattern provides a good source for deflection system checks. Abnormal conditions such as pincushion distortion, deflection nonlinearity and excessive 60 Hz hum are readily detected with this pattern. You should see a rectangular, linear grid on your display.

- Linearity, Size and Centering.
Adjust size and centering so crosshatch pattern is centered on your display with a border. If you are unable to bring the pattern into adjustment, it may indicate a vertical drive problem.
- Pincushion (nonlinearity)
A severe pincushion may indicate a deflection system problems. Lower level pincushion problems may be cured by circuitry adjustments. Minor pincushion distortion in corners may be due to the characteristics of your monitor in lower quality displays.
- 60 Hz Hum.
Hum is typically shown by a traveling vertical wave or bar. It usually indicates a defective dc power supply, or blocking capacitor. Typically, this problem requires circuit troubleshooting and cannot be cured with an adjustment. Circuit troubleshooting should only be carried out by a qualified technician.

HUE

The color bar can be used to check and adjust the hue of your monitor. If all primary and complementary colors appear normal in your bar pattern, you can assume that your hue controls are correctly set.

Note that all monitors may not have a HUE control. If this is the case, use the individual red, green and blue controls to obtain the desired colors in your color bar. However, before you make any adjustments, be sure to first check and adjust these controls using the raster pattern.

OVERSCAN

A typical monitor driven by this generator should produce a 9 x 9 grid pattern when the crosshatch pattern is used. However, some monitors may have a tendency for overscan and/or blanking. This condition may reduce the number of grid lines in your crosshatch pattern. Before making any adjustments, adjust contrast and brightness of your monitor to display sharp lines on a black background.